DataDirect NETWORKS

SFA™ OS

Version 1.5.3.0

Product Release Notes

SFA12K-40, SFA12K-20, SFA12K-20E, SFA10K-X, and S2A6620

Revision B
December, 2012

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1.0 Overview

This document applies to the SFA OS version 1.5.3.0-12955 release for DataDirect Networks' SFA12K-40, SFA12K-20, SFA12K-20E, SFA10K-X, and S2A6620 storage systems. It details upgrade procedures, enhancements, resolved issues, known issues with workarounds, and recommended practices associated with these SFA OS firmware updates:

- SFA12Ks from version 1.5.2.1 to 1.5.3.0
- SFA10Ks from version 1.5.1.4 to 1.5.3.0
- S2A6620s from version 1.5.1.1 to 1.5.3.0
- SFA12K-20Es from version 1.5.1.3, 1.5.2.1, or 1.5.2.2 to 1.5.3.0

IMPORTANT: Please contact support before attempting to upgrade from any version other than those listed above.

"SFA10K" represents SFA10K-X and SFA10K-M.

"SFA12K" represents SFA12K-40, SFA12K-20, and SFA12K-20E.

NOTE: There have been significant updates to the SFAOS v1.5.3.0 that benefit most operating environments. We highly recommend consulting with DDN tech support prior to upgrading from SFA10K-X with SFAOS v1.4.3 version or lower to this release (SFAOS v1.5.3.0) as some limitations may apply.

2.0 Installation

2.1 Overview

SFA OS version 1.5.3.0 is a mandatory maintenance release for SFA12K-20E systems running 1.5.2.1.

2.2 SFA12K-40, SFA12K-20, and SFA12K-20E Power Connections

There is an issue with UPS functionality that requires a change to the SFA12K's power connections. Refer to the *SFA OS User Guide* and the *SFA12K Product Family Quick Start Guide*, Revision C, Document No. 96-30051-001for the details.

NOTE: The power wiring change can take place either before or after updating the code – either is acceptable. The impact of the power wiring will only be seen when the site AC power fails.

2.3 Procedure to Request Firmware

To request the new firmware, contact DDN by sending an email to support@ddn.com and include the following information:

Name:
Title:
Company:
Address:
Phone:
Email:
System Type:
System Serial Number:
Firmware Upgrade Requested:

A response will be sent to the provided email with instructions on downloading the requested firmware.

2.4 Pre-Firmware-Upgrade Procedure

2.4.1 SFA12K-40, SFA12K-20, and SFA12K-20E

NOTE: Before upgrading SFA OS on an SFA12K system, please read this section carefully.

SFA OS 1.5.3.0 has a feature that will upgrade the SFA12K Baseboard Management Controller (BMC) firmware version automatically as part of the SFA OS upgrade. The automatic update will only function with SFA12K BMC versions newer than 21.54.

Prior to upgrading to 1.5.3.0, please identify your current BMC version and then check these notes:

1. If you have BMC version 21.54 or older, you must perform a manual BMC firmware update before you load the SFA OS 1.5.3.0 firmware. Refer to the *SFA12K BIOS and BMC Firmware Update Field Bulletin*, 96-00344-001.
2. The automatic update will take as long as 10 minutes. During that time, the SFA12K controller will be unresponsive and will not show progress.

WARNING: Do NOT interrupt this upgrade process; doing so could damage the controller.

3. If the BMC version is 21.62 (the current version), then the upgrade to SFA OS 1.5.3.0 will skip the BMC update (and its associated delay).

To identify your current BMC version:

1. View the output from **'SHOW ENCLOSURE'** to identify the enclosures representing your SFA12K-20E chassis.

   For example, see Figure 1.

```
$ show enclosure

************************
*     Enclosure(s)     *
************************

Idx|Pos|Type      |Logical ID        |Vendor ID|      Product ID|Revision|...
-------------------------------------------------------------------------------...
  0  NA CONTROLLER 0x0001ff0900160000        DDN          SFA12000    0000    ...
  1   3 DISK       0x50001ff211320000        DDN            SS7000    0502    ...
  2   2 DISK       0x50001ff2114be000        DDN            SS7000    0502    ...
  3   5 DISK       0x50001ff2114ce000        DDN            SS7000    0502    ...
  4   1 DISK       0x50001ff21156a000        DDN            SS7000    0502    ...
  5   4 DISK       0x50001ff2114ba000        DDN            SS7000    0502    ...
  6  NA CONTROLLER 0x0001ff0900100000        DDN          SFA12000    0000    ...

Total Enclosures: 7
```

Figure 1

Issue **'SHOW ENCLOSURE <x> ALL'** to identify your current BMC version. For example, see Figure 2.

```
$ show enclosure 0 all

***********************
*     Enclosure(s)     *
***********************

Index:                  0
Enclosure:              0x50000000
Type:                   CONTROLLER
Logical ID:             0x0001ff0900160000
Vendor ID:              DDN
Product ID:             SFA12000
Revision:               0000
Is Responsive:          TRUE
Fault Status:           OK
Child Fault Status:     NON-CRITICAL
Zones:                  0
Zoning Configuration:   0
Position:               NOT APPLICABLE
Fault Indicator:        OFF
Predicted Failure Ind:  OFF
Locate Indicator:       OFF
Baseboard part number:  X9DRX+-F-DD007
Baseboard serial number:WM21S31110
Baseboard date:         19960101
BIOS version:           21.0k
BMC version:            21.61
Firmware version:       1.5.1.2

Total Enclosures: 1
```

Figure 2

2.4.2 S2A6620

SFA OS 1.5.3.0 has a feature that will automatically upgrade the hardware revision of the Li-Ion fuel battery pack to revision C. If the hardware revision and/or the firware revision is below C, then the automatic update will upgrade both to revision C.

The automatic update will take as long as 10 minutes. During that time, the SFA6620 controller will be responsive and will indicate the progress of the upgrade in the logs.

WARNING: Do NOT interrupt this upgrade process; doing so could damage the controller.

Figure 3 is an example of SHOW UPS ALL showing how to locate the Hardware Revision of the Li-Ion battery pack.

```
Show ups all
******************
*     UPS(s)     *
******************

Sub Index:                          1
Sub OID:                            0x80000001
.
.
.
Serial number:                      0089
Hardware revision:                  C
Firmware version:                   C
Battery Long Term Storage Preparation: NO
Battery Long Term Storage Ready:       YES
Long Term Storage Ready ETA:           NOT AVAILABLE
Battery Op. State:                     UNKNOWN:10
```

Figure 3

The highlighted entries from the example log in Figure 4 show the entries that indicate the progress of the battery hardware revision upgrade.

```
.
.
.
441545 2012-12-13 17:55:46:2937039  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_ENCL_UPS_INFO     ES UPS for controller 0x15b2a1dc5c0000 changed state SES status =
2, disabled = 0, charge = 91%, hold-up time = 17 min.

441546 2012-12-13 17:55:47:2992493  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Start data flash image update .

441548 2012-12-13 17:55:59:5029285  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Saved System Config Data       .

441549 2012-12-13 17:56:00:5077759  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Data flash in ROM mode         .

441550 2012-12-13 17:56:00:5077799  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Read data flash image          .

441551 2012-12-13 17:56:04:5738611  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Erase data flash               .

441552 2012-12-13 17:56:07:6781660  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Write new image to data flash .

441569 2012-12-13 17:56:58:0940516  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Verify data flash-OK           .

441570 2012-12-13 17:56:59:0945333  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Data Flash in NORMAL mode      .

441571 2012-12-13 17:56:59:0945332  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Image updated successfully     .

441572 2012-12-13 17:57:00:1018638  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=0) - Status: Write System Config Data       .

441573 2012-12-13 17:57:13:2965139  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_ION_FW_UPDATE_STATUS     ES Controller 0x15b2a1dc5c0000 Li-Ion Battery FW
update (idx=7) - Status: System Config. Data Restored   .

441574 2012-12-13 17:57:14:2990331  G=56 S=0 T=1 RP=0 VP=00
LOG_ES_6620_LI_BATT_STATE_CHANGED     ES Controller 0x15b2a1dc5c0000 New State:IDLE
Prev.State:FLSHPRG Capacity= 1716 mAh Relative Capacity= 91% Fatal Fault= 0x00000000
Warning Fault= 0x00000000
.
.
.
```

Figure 4

2.5 Post-Firmware-Upgrade Procedure

2.5.1 SFA12K-40, SFA12K-20, SFA12K-20E, and SFA10K

After upgrading the firmware, perform these steps to initialize the battery life remaining feature:

1. Issue the command, **SHOW UPS * ALL_ATTRIBUTES**.
2. If you see a date in "Battery Mfg. Date", do nothing more.
3. If you see the message shown in Figure 5, then issue the command, **CLEAR CONTROLLER x UPS_HISTORY**, where "**x**" is either "**local**" or "**remote**" depending on which UPS needs to be cleared.

```
Battery Mfg. Date: NOT AVAILABLE
Battery Life Remaining: NOT AVAILABLE
```

Figure 5

4. Issue the command, **SHOW UPS * ALL_ATTRIBUTES**. You should see the message shown in Figure 6.

```
Battery Mfg. Date:  Thu Sep 8 4:10:30 2011
Battery Life Remaining: 730 days
```

Figure 6

2.5.2 S2A6620

After upgrading the firmware, perform these steps to initialize the battery life remaining feature:

1. Issue the command, **SHOW UPS * ALL_ATTRIBUTES**.
2. If you see a date in "Battery Mfg. Date" or you have a 6620 Li-Ion battery, do nothing more.

```
Battery Mfg. Date: NOT AVAILABLE
Battery Life Remaining: NOT AVAILABLE
```

Figure 7

3. Issue the command, **CLEAR CONTROLLER x UPS_HISTORY**, where "**x**" is either "**local**" or "**remote**" depending on which UPS needs to be cleared.
4. Issue the command, **SHOW UPS * ALL_ATTRIBUTES.** You should see output similar to that shown in Figure 8.

```
Battery Mfg. Date:  Thu Sep 8 4:10:30 2011
Battery Life Remaining: 730 days
```

Figure 8

3.0 Enhancements

SFA OS Version 1.5.3.0 adds no enhancements. For enhancements added by product, see the release notes versions given below.

- For SFA12K-40 and SFA12K-20, see the 1.5.2.1 release notes.
- For SFA12K-20E, see the 1.5.1.3 and 1.5.2.2 release notes.
- For the SFA10K, see the 1.5.1.4 release notes.
- For the S2A6620, see the 1.5.1.1 release notes.
- Added support for SFA12K-20E configurations with 1-4 SS7000 enclosures and 1 SS8460 enclosure.

4.0 Resolved Issues

These issues have been resolved since the previous SFA OS release.

- SFA OS version 1.5.2.1 introduced a new performance modification used exclusively by SFA12K-20E systems called Full Stripe Write optimization. An issue has been corrected where a drive disappears and its internal partial rebuild bitmap for the drive is not updated. This could lead to some stripes not being rebuilt when the missing drive reappears.
- For SFA12Ks the automatic BMC upgrade would force the BMC to version 21.61 even if the BMC was running a later version.
- For SFA12Ks in certain situations, when starting the controller, the controller may fail to start one or more virtual machines. The virtual machines that do start may not come up properly. When you try to query the state of the stacks using CLI, you may see messages like "Controller 1 has not received controller 1 CPLD data".
- There was an issue that resulted in double free when a Qlogic command is terminated because the port reset state was not cleared for odd ports on SFA10K and S2A6620 systems.
- There was an issue that caused SFA12K controllers to reboot and report a lot of temperature sensor errors by both controllers.
- A Li-Ion battery cell deterioration warning put the system into write-thru mode.
- For disk channels that are not connected and not supposed to be connected (such as in the SFA12K-20), the GUI would indicate these channels were faulted.
- On E platforms, issuing a “start stack” to an already running VM would stop and restart that stack.
- Imported initiator status was not being saved correctly and this caused the display to be incorrect in SHOW INITIATORS and SHOW HOSTS.
- Upgrading to the latest Ethernet driver corrected a problem where hardware detection didn’t always work on S2A6620s.
- On SFA10Ks, e-mails notifications received from SFA OS contained spurious characters at the end of the event.
- The SNMP agent inside the SFA controller would leave connections open. This would result in the CLI not being able to connect as the connections were not freed correctly and could also result in a controller crash.
- On S2A6620s Li-Ion battery faults resulted in many unnecessary log entries.

- On S2A6620s the Li-Ion battery bounced between state before it worked properly.

- The Li-Ion firmware upgrade on an S2A6620 would not attempt to upgrade the battery's firmware if the battery pack is failed even if a firmware upgrade is required to return it to service.
- When the Li Ion battery on the S2A6620 was in ROM mode due to a failed firmware upgrade, the battery would be reported missing.
- When logging into the controller via the CLI, an error message indicating that the CLI was unable to create shared memory would result in the login being refused.

- There was an issue that caused intermittent controller reboots on the SFA12K-20E.
- On the SFA 12000, infrequent false power supply errors would cause the controller to switch from write-back caching mode to write-thru mode.

5.0 Known Issues

5.1 Common

- The drive serial number reported in **`SHOW PD`** output may contain additional characters that are not on the disk label. The serial number on the disk label will always be contained within the potentially more verbose string reported by SFA OS.
- The GUI management agent included in the SFA OS supports Microsoft's Internet Explorer v9.0 in compatibility mode only. See the *Compatibility Guide* for the supported browsers.

- With RHEL6.2 and OFED 1.5.4.0 in an IB switch attached environment, it is possible that a virtual disk on a controller may not be added back to the multipath device map after a failover.

  To find the offline device, issue the command:

  lsscsi | awk -F/ '{print $NF}' | while read a; do printf "%s " $a; cat ,/sys/block/$a/device/state; done

  To bring the device back online, issue the command:

  #echo running > /sys/block/<*sd??*>/device/state and #multipath -r

  where you replace <*sd??*> with the appropriate sd, for example *sdaf*, found from the previous command.

  A workaround for this issue is to update these packages:

  - **device-mapper:1.02.74-10.e16**
  - **device-mapper-multipath: 0.4.9-56.el6_3.1.x86_64**

  DDN recommends that you install these as soon as possible.

- If stack commands (CLI commands starting with 'app') are issued shortly after rebooting a controller, you may encounter communication errors displayed in the CLI, and failure of the attempted commands. Errors may include:
    - Long delays followed by:

      `Communication connection failed for this command`
    - Or this message:

      `ASM initialization in progress`

  Suggested Work Around

    - After the failed controller comes back up, do not immediately issue any CLI commands besides "`show controller`".
    - Connect to the remaining controller and issue this command:

      `$ show controller`
    - When "`show controller`" shows the remote controller in the output, focus on the ULA field in the output. The remote controller won't show up until it is fully booted.
    - If the ULA field has the value "`0000000000000000`", continue to wait and not issue any CLI commands besides "`show controller`".

      Here is example full output of the condition where you want to wait:

```
$ show controller

************************
*     Controller(s)    *
************************


                                    |   Up Time   |                  |Encl|               |...
Idx|Name          |Mastership|Locality|   D: H: M: S|RP|       ID       |Idx |       ULA      |...
-------------------------------------------------------------------------------------------...
  0 A              PRIMARY     LOCAL   0000:20:24:34  1 0001ff0900180000   0  00000001ff0800ac ...
  1 B              SECONDARY   REMOTE  0000:00:00:05  1 0001ff09002d0000   0  0000000000000000 ...

Total Controllers: 2
```

    - When the ULA number has something other than all zeros for the remote controller, it is now safe to issue CLI commands and avoid the communication problems.
- If a stack/VM is already running, and you issue a "`app start stack`" command for that stack/VM, in some cases the stack/VM will be reset instead of giving an error message that the stack is already running.

  Suggested Work Around

  If you are using scripts with the CLI command to work with stacks, it is best to check if the stack is running or not before issuing "app start stack". That will effectively work around this problem.

5.2 SFA12K-20E

On SFA12K-20E systems, if you choose to use the enhanced VM network management (SR-IOV), there is a problem which prevents binding the app IOC associated with the second physical interface on the SFA controller. If you bind the second interface, the VM may fail to start properly.

To avoid this problem, use the CLI to bind these IOCs to stacks (VMs):

```
app bind stack 0 ioc 01792
app bind stack 32768 ioc 34560
```

NOTE: The SFA controller can have its management network configured on either eth0 or eth1. However, the VMs can only make use of SR-IOV enhanced VM management networking from controller eth0. Do not use the IOCs associated with the controller's eth1 (01793 or 34561).

5.3 SFA12K and SFA10K

- Issuing a **DELETE CONFIG** command to a SFA12K-20E with IB removes the discovered initiators but leaves the channels up. Host computers and the SFA may indicate valid connections; however, they will not function until the SFA is restarted.
- QLogic IB HCA and IB switch products may fail to negotiate QDR speeds with an IB-attached SFA product. This is not an issue in SFA OS, but is a known issue in the IB driver.
- The SS7000 enclosure does not support the **SET SLOT xx POWER OFF** command with enclosure firmware versions prior to 05.02.01.
- In the SS7000, when removing an I/O module or cable under load, it is possible that one or more disks could be marked failed which would change the redundancy of the storage pools. This is due to in-flight I/O being timed out and retried before the IOC reports the drive as missing. There is a high probability that the newly failed drives are fine and can be returned to service by clearing the failed state and reassigning them to pools.

  Use the following procedure to clear a failed drive and reassign it back to a pool:

show unassigned failed	←Shows which PD have failed; get drive's <id>
show pool	←Shows which pools are involved
clear pd <id> failed	←<id> is from `show unassigned` output
assign pd <id> to pool-id set	←Pool-ID is shown in the `show pool` output

  NOTE: If the pool sparing policy is set to 'SWAP', the SFA will typically auto rebuild the drives, using fractional or full rebuild depending on the duration of the interruption.

- In an InfiniBand switch environment, there is a small chance that if a cable between the switch and the controller is pulled, both the physical link and the logical link will be lost. This has occurred with a Mellanox 6025F Switch and a Mellanox HCA.

- In an InfiniBand switch environment running RHEL 5.7, if a cable is pulled from either an initiator or a target, a failover occurs as expected; however, once the connection is reestablished, it does not fail back to the original controller.
    - In order to resolve this issue, you must issue the command, **# udevtrigger**.
    - The Linux man pages state that the command will simply "request kernel devices events for coldplug". This will force udev to send a notification for newly discovered path, which will allow the multipath daemon to detect that the path has returned. After the multipath discovery takes place, I/Os can be rebalanced back to allow the preferred paths to be used.
- In an InfiniBand switch environment, an online upgrade causes an I/O error while upgrading the second controller with SLES 10 SP4. In an FC environment, there are no issues because the discovery rate is much quicker. The only option for SFA upgrades with SLES 10 SP4 is to perform the upgrade offline.

  To perform the upgrade offline,

  1. Issue the CLI command **`set subsystem offline.`**
  2. Perform the controller firmware upgrade on both controllers.
  3. Issue the CLI command **`shutdown subsystem restart`**.
  4. After both controllers come back online, issue the CLI command **`application show discovered_initiator.`** This should report "No discovered_initiators exist." This will be the state until a read request for information from those SCSI devices is issued. Once the devices are accessed, there will be a small delay as they are rediscovered by the system.

5.4 SFA10K and S2A6620

- On SS6000 enclosures the **DISPLAY POWER_SUPPLY** command may fail to display the last three characters of the power supply serial number. This is only a display issue, the command will complete successfully with no adverse effects other than the truncated results.
- The SS6000 may encounter a problem where show enclosure commands will return the following error message: "A command issued to an enclosure to get attributes for the UI timed out." This is an issue in the enclosure firmware v3.001 that is resolved by upgrading to enclosure firmware v3.010.
- Powering off drives is not supported with 6KSSI interposers in the SS6000 enclosure. If you issue the command, **SET SLOT** <*encl-id slot-id*> **POWER OFF**, the system erroneously displays a success message. However, the drive power is **not** affected by the command.

5.5 SFA10K

- The SS2460 does not support SLOT POWER OFF feature and so the **SET SLOT POWER** command has no effect on drives in the SS2460.
- The Management Ethernet port (LAN4) may boot running at 10 Mb/sec half-duplex, instead of 100 Mb/sec or 1000 Mb/sec full-duplex. Typically, full Ethernet port speeds can be restored by unplugging and replugging the Ethernet cable to the controller port experiencing the slow speed. If the issue persists, please contact, support@ddn.com.

5.6 S2A6620

Power up the base enclosure first to ensure that full-drive rebuilds do not occur. Full drive rebuilds may occur when the optional StorageScaler expansion chassis is powered up before the main enclosure.

5.7 Red Hat 6.2

This section applies to the SFA12K-40, SFA12K-20, SFA10K-X, SFA10K-M, and S2A6620.

- Updating the kernel and multipath packages to the latest version is recommended. As of this release, DDN qualified versions include:
  - the kernel version - 2.6.32-279.2.1.el6.x86_64
  - the multipath version - 0.4.9-56.el6_3.1.x86_64.
- The kernel modules that come with OFED 1.5.4 will cause I/O threads to hang when the data path between the controller and switch is lost. A workaround for this issue is to use the Red Hat supplied InfiniBand solution. For a switched InfiniBand environment:
  - Install the in-box OFED drivers that come with RHEL 6 Update 2
  - Update the multipath-tools package to a minimal version of 0.4.9-56.el_3.1
  - Do not use user-friendly names in multipath.conf
  - Configure RHEL 6 Update 2 to a minimal kernel version of 2.6.32-279.2.1.el6
- These packages are required for InfiniBand support on Red Hat. (Use the command, **`yum groupinstall infiniband`** to install all IB packages):
  - ibutils-1.5.7-6.el6.x86_64
  - infiniband-diags-1.5.12-3.el6.x86_64
  - opensm-libs-3.3.13-1.el6.x86_64
  - opensm-3.3.13-1.el6.x86_64
  - libmlx4-1.0.2-5.el6.x86_64
  - srptools-0.0.4-15.el6.x86_64
- To start IB lun discovery, issue these commands:
  1. **modprobe ib_umad**
  2. **modprobe ib_uverbs**
  3. **modprobe mlx4_ib**
  4. **opensm -g <***port GUID***>** (where *port GUID* is the port GUID from ibstat output
  5. **run_srp_daemon -R 20 -T 10 -nce -i <***ca_name***> -p <***port***>** (where *ca_name* is the channel adapter name and port is the *port* number)

6.0 Recommended Practices

The recommended best practices for the SFA12K-40, SFA12K-20, SFA12K-20E, SFA10K-X, SFA10K-M, and S2A6620 with SFA OS version 1.5.3.0 include:

- **SS6000 DEM and I/O module replacement.**

  For SS6000 DEM and I/O module replacement, see the *SFA OS User Guide* for the procedures.

- **Reduce host I/O load during background initializations.**

  When a storage pool is in the process of being initialized, a significant internal I/O load is generated. To avoid poor performance, DDN recommends that heavy host I/O loads be avoided until pool initialization has completed.

- **On hosts that are directly connected, if the configuration is cleared, the Fibre Channel initiators may not log back into the subsystem.**

  This results in no initiators being available to assign to new presentations. To correct this, do a rescan from the host before setting up your presentations. This does not apply to the SFA12K-40, SFA12K-20, and SFA12K-20E.

- **Disk firmware upgrades.**

  Before performing a disk firmware upgrade, scp the .DDN file to both controllers. This avoids a situation where a controller attempts to perform the upgrade but can't find the .DDN file.

- **Firmware upgrades should be done during low usage periods whenever possible.**

  As upgrading your system will interrupt I/O operations as paths fail over, be aware of the possibility of increased I/O latencies during the upgrade operation. Prior to upgrading your firmware, DDN recommends your reviewing the system logs to ensure the system is running cleanly. DDN also recommends your allowing any rebuilds and forced verify jobs to complete and pausing any running verify jobs.

7.0 Compatibility Guide

The *SFA OS Compatibility Guide* lists the client operating systems, HBA and HCAs, enclosures, and disk drives that are supported by SFA OS. The guide is available at http://www.ddn.com/en/support/product-downloads-and-documentation.

NOTE: The Compatibility Guide applies to SFA12K-40, SFA12K-20, SFA10K-X, SFA10K-M, and S2A6620

8.0 Support

To submit debug information to DDN, use the **`diag tgz`** command.

`Diag` is a captive account on SFA OS systems that is used for performing operations on a controller when there's no CLI access or the CLI isn't appropriate. Perform diag operations by using ssh to login to the diag account.

The command syntax is:

`ssh diag@xxx.xxx.xxx.xxx` *`diag-command`*

(where xxx.xxx.xxx.xxx is the controller's IP address and diag-commands are listed in Table 1.)

Table 1 Valid diag commands and descriptions

Command	Description
help	Displays the help information.
clear	Clears all old crash files (it will clear a recursive crash).
reboot	Used to restart the controller if the RAID stack is not running. If the RAID stack is running, this command will fail and you should use the CLI to perform this operation.
shutdown	Used to shutdown the controller if RAID stack is not running. If the RAID stack is running, this command will fail and you should use the CLI to perform this operation.
tgz	Creates a .tgz file of all the crash information. The file is output to stdout and since it's a binary file, having it display on your terminal isn't desirable. Redirect stdout to your workstation with a command like: `ssh diag@xxx.xxx.xxx.xxx tgz > crash.tgz`

Please contact DataDirect Networks Support at any time for assistance. Support can be reached by these methods:

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Email: support@ddn.com
North America: +1.888.634.2374
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